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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/CEMENT/2016-17 Date: 08.06.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
*NAME OF THE WORK	:	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
*REFERENCE	:	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
SAMPLE ID	:	Cement – Sample 2
SAMPLE RECEIVED ON	:	04.06.2016
PERIOD OF TESTING	:	04.06.2016 to 08.06.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	145 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	485 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

AE-06 n/a

*Information is furnished by the Customer/Representative.

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/SAND-Gradation/2016-17 : 08.06.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. L. Gangadhar,**
No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.

*** Name of Work** : Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates – Sample 2

Sample Received on : 04.06.2016

Date of Testing : 08.06.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	95.00	90-100	90-100	90-100	95-100
2.36	76.00	60-95	75-100	85-100	95-100
1.18	54.50	30-70	55-90	75-100	90-100
600 Micron	26.00	15-34	35-59	60-79	80-100
300 Micron	13.00	5-20	8-30	12-40	15-50
150 Micron	4.00	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

AE-06 n/a only

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/AGG/GR/2016-17 : 08.06.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. L. Gangadhar,**
No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.

*** Name of Work** : Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (40mm) - Sample 2

Sample Received on : 04.06.2016

Date of Testing : 08.06.2016

Total Wt. of Aggregates in gms= **7000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.36	95-100	85-100
20	36.64	30-70	0-20
10	20.21	10-35	0-5
4.75	3.07	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

Note:

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Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/AGG/GR/2016-17 : 08.06.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
* Name of Work	: Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
* Reference	: BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (20mm) – Sample 2
Sample Received on	: 04.06.2016
Date of Testing	: 08.06.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2007)	
		Graded	Single Sized
40	100	100	100
20	97.70	95-100	85-100
10	32.00	25-55	0-20
4.75	5.00	0-10	0-5

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

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VISHWANATH .C
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Job No.: CTCE/BBMP/W.No.06/LG /STEEL/2016-17 20.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
Name of the Work	:	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
Date of Test	:	20.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	12	0.89	515	558	13.30	O.K	O.K

AE-06 n/a

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Job No.: CTCE/BBMP/W.No.06/LG /STEEL/2016-17 20.06.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
Name of the Work	:	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
Date of Test	:	20.06.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	16	1.58	520	563	13.55	O.K	O.K

AE-06 n/a

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Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/CUBE/2016-17 20.07.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. L. Gangadhar,**
No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.

*** Name of the work** : Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

*** Reference** : BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016

*** Sample ID** : Culvert Deck Slab Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*** Grade of Concrete** : M_{20}

Compressive Strength as on : 28th day

Sample Received on : 20.07.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	22.06.2016	20.07.2016	8.185	483.3	21.48
2	22.06.2016	20.07.2016	8.239	496.3	22.06
3	22.06.2016	20.07.2016	8.315	505.6	22.47

AE-06 n/a ಸ.ಕ.ಅ.

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Job No.: CTCE/BBMP/W.No.06/LG/WMM/Gradation/2016-17 13.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. L. Gangadhar,**
No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.

Name of Work : Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016

Date of Testing : 13.07.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7685**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	285	285	3.7	96.3	95-100
22.4	2405	2690	35.0	65.0	60-80
11.2	1210	3900	50.7	49.3	40-60
4.75	1080	4980	64.8	35.2	25-40
2.36	990	5970	77.7	22.3	15-30
0.600	685	6655	86.6	13.4	8-22
0.075	600	7255	94.4	5.6	0-8

AE-06 n/a

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Job No.: CTCE/BBMP/W.No.06/LG/WMM/Gradation/2016-17 13.07.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. L. Gangadhar,**
No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.

Name of Work : Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016

Date of Testing : 13.07.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7685**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	285	285	3.7	96.3	95-100
22.4	2405	2690	35.0	65.0	60-80
11.2	1210	3900	50.7	49.3	40-60
4.75	1080	4980	64.8	35.2	25-40
2.36	990	5970	77.7	22.3	15-30
0.600	685	6655	86.6	13.4	8-22
0.075	600	7255	94.4	5.6	0-8

AE-06 n/a

Note:

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Job No.: CTCE/BBMP/W.No.06/LG/WMM/AIV/2016-17 13.07.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
Name of the Work	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	13.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	301	
4	Aggregate Impact value = percent fines	21.05	21.20	
	100* (W_2/W_1)%			21.13

AE-06 n/a

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.06/LG/WMM/S-T/2016-17 13.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
Name of Work	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	13.07.2016

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.35%**

Elongation Index = **13.69%**

Result : Combined Flakiness & Elongation index 26.04%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.06/LG/CSR-06/057n/QB/2016-17 16.07.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
*NAME OF THE WORK	:	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	14.07.2016
DATE OF TESTING	:	16.07.2016

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	82	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	296	Min. 220

AE-06 n/a m/ ಸ.ಕಾ.ಪ.

*Information is furnished by the Customer/Representative.

Note:

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/LG/SDBC/Bit/2016-17

20.07.2016

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
NAME OF THE WORK	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
SAMPLE I/D	Roads in Amarjyothi layout Ward No.06.
DATE OF TESTING	20.07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	25.50
7. Bitumen content in %	5.00	5.10
8. Average	**5.05**	

AE-06 n/a

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/LG/SDBC/Bit/2016-17 20.07.2016

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. L. Gangadhar,** No. 22, 2nd Cross, Lingappa Block, R.T. Nagara, Bangalore - 32.
NAME OF THE WORK	Improvements to Roads and Drains at Amarjyothi layout (Kavyam Masjid) in Ward No.06 Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/EE/BTP/WO/09/2016-17 Dated: 30.04.2016
SAMPLE I/D	Roads in Amarjyothi layout Ward No.06.
DATE OF TESTING	20.07.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	26.69	5.62	5.62	94.38	90-100
4.75	258.6	54.44	60.06	39.94	35-51
2.36	52.32	11.01	71.08	28.92	24-39
1.18	41.22	8.68	79.75	20.25	15-30
0.3	33.15	6.98	86.73	13.27	9-19
0.075	33.19	6.99	93.72	6.28	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	25.28	5.33	5.33	94.67	90-100
4.75	269.9	56.88	62.21	37.79	35-51
2.36	35.15	7.41	69.62	30.38	24-39
1.18	31.25	6.59	76.20	23.80	15-30
0.3	42.32	8.92	85.12	14.88	9-19
0.075	41.23	8.69	93.81	6.19	3-8

AE-06 n/a

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